The Global Health CHRONICLES

MALARIA CONTROL: CDC BEGINNINGS

**Henderson, Donald A. "DA", MD, MPH, (EIS Class 1955)**

**Date of Interview: April 12, 2012**

**Link to Interview:**

**Summary of Interview:**

Dr. D.A. Henderson, EIS Class of 1955 describes his roles in the early days of CDC and his relationship with Alex Langmuir. He also reflects on the role of CDC and bioterrorism and the way in which surveillance and reportable diseases evolved. He later went on to head the effort of the World Health Organization to eradicate small pox.

**Notable Quotations from Interview:**

On Alex Langmuir*: "Suddenly I was the Chief EIS officer, although basically serving as sort of a deputy assistant to Alex Langmuir. It was a great experience, because Alex was a teacher par excellence. He was difficult. He was charming and I must say he had lots of ideas, a very stimulating guy to work with. Some did not get along well with Alex, but I must say I really did. He was really my mentor for the next 12 to 20 years…wonderful man."*

On infectious diseases: "*So I went off for two years of internal medicine at Bassett Hospital. During that time, it was repeatedly stated by the Surgeon General and also by McFarland Barnett, a Nobel Laureate, that we had come to the end of an era, the era of infectious diseases, and the future for preventive medicine was the chronic disease field. And indeed there were many changes that had taken place with vaccines and antibiotics, with medical care, what have you. I thought, well, I better see what I can do about getting some training in chronic disease epidemiology."*

On the role of CDC to state health departments "…*service to the states was really the key item. This concept immediately ran into difficulty with NIH leadership who believed NIH should have priority whenever it chose. This was the genesis of the Epidemic Aid memo which described the nature of the request for assistance and how CDC was responding. It welcomed appropriate participation by NIH or any other relevant agency and it was widely distributed. As it turned out there was never a conflict. However, copies of the memo were sent widely to the Surgeon General and others who welcomed*

*this approach and found the information to be very informative. It generated a great deal of good publicity for CDC.*

*"One item of possible interest; from what I understand from talking with Alex and Justin Andrews who had played an important role in launching CDC, the longer term survival of CDC was felt by them to be in doubt. Here was a federal establishment in a city, distant from Washington. It was in rented office space on Peachtree Street and there was a question of whether CDC would survive as an entity. It then consisted only of the remnants of the malaria control program and many of those activities were in Savannah. CDC had some virology labs in Montgomery, Alabama, and bacteriology labs in suburban Atlanta plus the office space in downtown Atlanta. There was fear the various components would be transferred to other activities and that CDC, as such, would be abolished. Thus, the idea that if there were a special purpose-built permanent building adjacent to Emory, CDC was far more likely to survive. A new building was finally completed in 1960. I'd just come back from residency, so I was one of the first residents in that building and now that building has just been demolished!"*

On bioterrorism*: "Alex Langmuir was an advisor to the armed forces epidemiological board which is a military group. And during the war he had been part of the respiratory disease commission. They were looking at the problems of respiratory infections in troops, particularly in the training camps. There was a lot of absenteeism because of it and they were trying to deal with that. He did have secret clearance. I did not. He was the only one that did. So a number of things went on that I would not know about. And he did consult on potential biological weapons.*

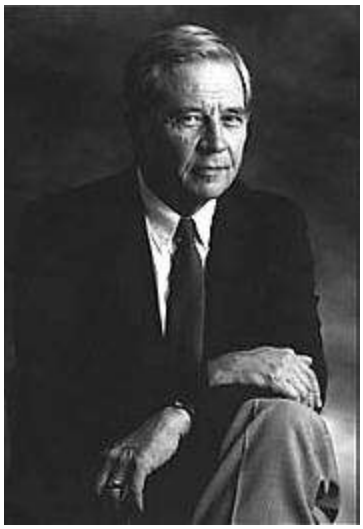
*The genesis of this relates to the Japanese who, in World War II, had a laboratory. They in fact produced a number of organisms and waged war on China in a number of ways. They released cholera plague, and several other organisms. Then at the end of the war that laboratory became part of China."*

**Key Terms in Interview:**

Johns Hopkins University; The Presidential Medal of Freedom, The National Medal of Science; National Academy of Sciences award— Public Welfare medal; The Communicable Disease Center; infectious diseases; Epidemic Intelligence Service; George Corner History of Medicine prize; cholera epidemic; epidemic curve; biostatistics; diphtheria; pneumonia antiserum; shoe leather epidemiologist ; shiny pants epidemiologist; Epidemic Aid Memo.. NIH; Chronic Fatigue Syndrome; polio; mimeograph; Association [Council] of State and Territorial Epidemiologists; malaria; Salk vaccine; diphtheria; hepatitis ; measles; malaria; World Health Organization (WHO); WHO's Weekly Epidemiological Record; cholera; yellow fever; smallpox; bioterrorism; bifurcated needle.

## Key People Mentioned in Interview:

Alexander, Russ
Andrews, Justin
Barnett, McFarland
Brachman, Phil
Breman, Joel
Hall, Jack
Hogan, Ralph
Hollister, Ace
Hoover, Herbert
Korns, Bob
Langmuir, Alex
Lilienfeld, Abraham
Meyer, K.F.
Myers, Ira
Nathanson, Neil
Poskanzer, David
Russell, Phillip
Serfling, Bob
Shelekov, Alexis
Sherman, Ida
Simmons, Sib
Steele, Jim



**D.A. Henderson**

**MALARIA: CDC BEGINNINGS INTERVIEW**

**This is Karen Torghele. It's April 12, 2012. I'm in Baltimore at the office of D.A. Henderson and in a minute I will let you introduce yourself. First, I want to be sure that it's okay to record this interview.**

Fine. I hereby give permission to use this interview in any appropriate way that you choose.

I am D.A. Henderson. I am a Distinguished Scholar at the Center for Biosecurity which I founded in 1998 and which has prospered ever since. I am a Professor of Medicine and Public Health at the University of Pittsburgh and University Distinguished Service Professor at Johns Hopkins University.

**You have awards too numerous to even mention. I was wondering how you would get them all on the walls of your office, but I bet you don't have nearly all of them up.**

Oh no, no. These are really just a few. When I went to the White House, they said, "If you have any things that you can put up on your walls which indicate you have received awards, this will be important, because people here pay a lot of attention to this sort of a thing."

I said, "Oh my goodness."

So, sure, I brought in a number of diplomas and award certificates got them framed. I guess people were impressed, I don't know. As I went along I decided this effort really hadn't been that important but I didn't know. I have a number of honorary degrees, and

each is recognized by a diploma. There have been a number of other awards. Eventually when I came back here, I took most of them out of the frames and just left a few up.

**They're nice looking, and the ones that are not framed that are stand-alone look very impressive.**

Well there's three of which I'm really very proud -- *The Presidential Medal of Freedom, The National Medal of Science, and one from* the National Academy of Sciences. It's called *The Public Welfare* medal, which goes back well before Herbert Hoover. They give one a year. That was a very welcome distinction.

***Henderson Awarded Nation's Highest Civilian Honor***

*The guest list was the sort that only a president could draw up: comedian Bill Cosby, former first lady Nancy Reagan, home run king Hank Aaron, television's "Mister Rogers"—Fred Rogers himself—and D.A. Henderson, former dean of the School and the man who led the successful World Health Organization effort to eradicate smallpox.*

*Henderson and the elite, eclectic group were honored July 9 as Presidential Medal of Freedom winners during a White House ceremony.*

Medal Man: D.A. Henderson with President Bush (White House Photo by Paul Morse)

*"D.A. Henderson is a great general in mankind's war against disease," said President George W. Bush, lauding Henderson's efforts to subdue smallpox and his recent work against bioterrorism. "Our nation is fortunate to be able to draw on D.A. Henderson's great store of wisdom and experience as we work to lift the dark threat of terrorism from the nation and our world."*

**Congratulations!**

**Now, as I was explaining before, I know that we have recordings of you talking about smallpox and that you've talked about that in a number of interviews. What we want to focus on in this interview is your other CDC experiences. Even though you were too young to have been there yourself when CDC began, you interacted with some of the people who were there in the beginning. So if you could talk about what you do know about the genesis of what was then called *The Communicable Disease Center* and include your reflections, it will help to add to the base of information about the time from 1942 to 1952 as it relates to CDC.**

I came to CDC in June of 1955. I had been an intern at Mary Imogene Bassett Hospital in Cooperstown before that. I was recruited by a man who, at that time, was the Chief EIS officer named Ira Myers who had served his two-year stint

of duty in the public health service. When he came to Cooperstown, he advised everyone that we had an option as to which uniformed service we wished to serve our mandatory service of two years. One was the Public Health Service about which I knew nothing. He was seeking recruits for *The Communicable Disease Center* about which I also knew nothing but neither did any of the senior staff of the hospital. CDC was little known at that point.

I was not interested in infectious diseases to tell you the truth. I was mainly thinking of being an internist and cardiologist. I didn't like infectious disease medicine. Many cases were in young kids with a fever and rash. The rash never looked like any in a text book. The kids squirmed a lot and were difficult to examine and couldn't tell what their symptoms are. At that time, I really didn't think that this would be suitable specialty for me. More than that, I wasn't very good in trying to draw blood from young kids for special studies. I had decided I would opt for a specialty in which one treated adults. However, with only one year of internship and entering military services I presumed that I'd probably wind up giving entry level physicals to recruits. I couldn't think of anything that could be more dull. Myers explained that those in the Epidemic Intelligence Service were on call to investigate and control epidemics and that there would be a number of interesting field experiences. I finally decided, well, this is just two years, I might learn something that would be of value. It would not be two years spent on some sort of idle duty which would not be really helpful to my progressive understanding of medicine.

He asked about what experience I had had in infectious diseases. I had not had any more than in an ordinary first year internship But I did do one thing: I told him that I'd won the *George Corner History of Medicine* prize at the University of Rochester. It was a prize of two-hundred dollars for the best treatise in a historical subject of medicine. At that time, there was a book called *Grandfather Tales*, which was a compilation of stories that took place in Upstate New York. The book was popular and read very well. And I was intrigued by the cholera epidemic which had struck in 1832 and I thought, "Well, you know, I could write a treatise on that." I believed I could get information from newspapers and local accounts of the time. Besides there was a two-hundred dollar prize which for my wife and I was a huge amount of money at that time.

So that's what I did. The newspapers provided a great deal of information about cases, their dates of onset and where they lived. I was surprised. I could make a spot map of the city. I could even draw a curve, like an epidemic curve. It was really interesting. Really, what I was getting was an introduction to epidemiology because we had no course like this in medical school. So I wrote the treatise. I think I was the only one that did, but at any rate I got the prize. So I told the recruiter, Ira Myers, "I'm very interested in cholera and I've received the George Corner prize for a treatise on cholera." He

seemed very impressed. At any rate, I got accepted for the EIS—maybe under false pretenses.

At any rate I wound up in Atlanta, the CDC headquarters in 1955. The EIS was only the fourth class. Our orientation consisted of one-month training which was a combination of epidemiology and biostatistics. Originally, teaching this were people from Johns Hopkins because Alex had very few staff.

**This would be Alex Langmuir?**

Alex Langmuir was head of the epidemiology program at CDC and had come from Johns Hopkins where he had been on the faculty. He did a certain amount of teaching himself, but he needed help. After I came, we pretty much switched over so that we, ourselves, as EIS officers, took major responsibility for the teaching. Prior to the July orientation period, the new EIS cadre would convene in April at an EIS conference. At the meeting, the positions that would be available were identified and recruits would express their preferences. It was like an internship matching program. At this time, I'd become fascinated with the possibilities of administration itself.

I'd gotten involved in Oberlin College with administration as editor of a yearbook, which was quite an enterprise. It required a substantial staff. I found that it was creative having different people with different talents, working together to complete a book. I then went on with my roommate to found a radio station at Oberlin, which still exists today. Like the book it required skills in creativity, organization and recruitment and a whole lot of things.

After I entered medical school, I began to think, "I wonder how you get to be a dean." So I talked to the dean at Rochester, he was new at that time. It was my third year. So I was chatting with him one day and I said, "How do you get to become a dean?"

He said, "Don't think about it until you're ready to retire. You'll use up all of your scientific credentials and understanding and there's nothing to do at that point but retire, so don't become a dean." And actually I did take that advice later on when a couple of offers that were made. I declined.

At any rate, in the EIS, there was a position called "Assistant Chief EIS Officer," and it was said to be, you'd be sort of a gopher. You'd do some of the training but the duties were essentially to be a gopher for the Chief EIS Officer; arranging recruitment and organizing courses and so forth, so I thought, "Well, why not? It's an administrative kind of operation and it will give me a chance to explore further whether I want to take that route." And so I took the assignment.

We no more than finished the course when several of us were sent off to an epidemic of diphtheria in Alabama. I was down there for some three weeks and came back and there was Ira Myers, the Chief EIS officer, putting all his books in boxes, and I said, "What are you doing?"

He said, "I have a new job. I'm going to be the Commissioner of Health for the state of Alabama."

I said, "Well, where does this leave me?"

He said, "Well, I guess you're the Chief EIS officer, aren't you?"

I said, "I don't know what or even where the files are. I don't have any idea of what I'm supposed to do!"

He said, "You'll learn," and off he went. Suddenly I was the Chief EIS officer, although basically serving as sort of a deputy assistant to Alex Langmuir. It was a great experience, because Alex was a teacher par excellence. He was difficult. He was charming and I must say he had lots of ideas, a very stimulating guy to work with. Some did not get along well with Alex, but I must say I really did. He was really my mentor for the next 12 to 20 years…wonderful man.

During my EIS years with Alex, we talked about the problem of retaining people, because most of the staff that were recruited were individuals whose career goals were academic medicine, internal medicine or pediatrics. A few were interested in practice but most were quite high in their classes and were really academically inclined. The question was how we keep people on beyond the two years of compulsory service. We evolved the idea of a five-year, post EIS program that would consist of two years in which the EIS officer could do residency training in whatever field he wished. Then there'd be two years at CDC, which would be purely an option of the director of the Division of Epidemiology and then a fifth year, which would be an optional year, which would be mutually decided.

We wrote it up and sent it to the Surgeon General and got approval. I promptly applied and Phil Brachman was another one that came in and others followed.

So I went off for two years of internal medicine at Bassett Hospital. During that time, it was repeatedly stated by the Surgeon General and also by McFarland Barnett, a Nobel Laureate, that we had come to the end of an era, the era of infectious diseases, and the future for preventive medicine was the chronic disease field. And indeed there were many changes that had taken place with vaccines and antibiotics, with medical care, what have you. I thought, "Well, I better see what I can do about getting some training in chronic disease epidemiology." So I approached Abraham Lilienfeld who was head

of epidemiology at Hopkins, an old friend, and talked to him about being a Fellow in his department.

**He specialized in heart epidemiology?**

Abe did a lot in that field and others as well. Abe was probably one of the leading chronic disease epidemiologists at that time and a great teacher. So when I came down to Hopkins he said, "Why don't you get an MPH degree?"

I said, "I don't see any reason, Abe, for getting it."

He said, "Yeah but, look, you could take a couple of courses here and I could fill out the rest."

So I had an office in the school which is very unusual. Students don't get an office, but I shared an office with one of the younger professors and spent a good part of the year in chronic disease epidemiology. By the end of the year, I decided it really was not for me. It takes patience. It takes a lot of very careful work. I don't know how many studies that I've vetted which probed very interesting areas, but then five years or more into it realized that there were two or three critical questions they should have asked at the beginning but didn't and, thus, whole study was much less valuable. So I decided that chronic disease epidemiology was for somebody else. .

I decided that I would plan on a career with the CDC, so I stayed on. I returned to CDC in 1960 and at that time worked as an assistant to Alex and later took over as Chief of Surveillance section which constituted about half of Epidemiology Branch. . One of the Atlanta-based people was Phil Brachman, head of activities pertaining to bacterial diseases. .

So it was, during this time, whatever I learned about the origins of CDC were related to me by Alex. Prior to coming to CDC, he had done a lot of field work with the New York State Health Department. He was part of the pneumonia group. They had pneumonia anti-serum for treatment of cases. When they got a case of pneumonia, they had to type the organism and provide the proper type of anti-serum for it. New York State Health Department was a very good health department and this is where Alex was very much turned on to the idea of a focus on field of epidemiology. He, himself, really enjoyed this time, there was no question about it and so heavy emphasis for EIS was the field experience. He was a very good coach and mentor for those going into the field.

**I think I read for the first time the term "shiny pants epidemiologist" versus "field epidemiologist" in your book [*Smallpox—the Death of a Disease…,* published 2009] or an interview that you did. I had not heard that term before.**

We used it on a number of occasions, but I can't tell you where it got started. The logical counterpart to the 'shoe leather epidemiologist' was the 'shiny pants epidemiologist' and I must say those who were active as shoe leather epidemiologists were always a little bit scornful of those who never got their shoes muddy at all.

As a part of the course, the group had to design a survey and to go out in the field, door-to-door to try to get information on X and Y. It was an exercise designed to get everybody into the field and to gain an appreciation of what it was like. It was a neat idea. You couldn't do that today because of the complications of clearance by ethical review boards and clearance through other committees. I believe that many of us lost a reticence about going into the field, meeting strangers, explaining what one was doing and getting cooperation.

**And when you took the EIS course, you had Lilienfeld and Dr. Langmuir for teachers. Do you remember others?**

Well there was some teaching done by Bob Serfling and Ida Sherman who were statisticians. Both of them were really very capable people, both of them very low-key.. But for the life of me I'm afraid I can't—

**Were there messages that stuck out in your mind that Langmuir left with you when he gave his instructions to you EIS officers?**

There were some things that I thought were very appropriate. One, for example, was to always bear in mind when you're being asked by the media for an interview that your salary is paid by the government, that you have a responsibility to communicate to the people of this country. Reporters play an important role. Thus, one should always try to respond to press queries and try to help them understand what you're doing and what you're finding. I've adhered to that advice ever since. I seldom turn down a reporter. He also was very strict on another thing. And that is that when we worked in a state let's say with the state epidemiologist and his staff, gathering information which had the potential to be published as a paper. The question of who should have principal authorship on that paper should be made by the people who are in charge of the state or of the city. As he emphasized, these people will be there long after we leave. They have long-term continuity of responsibility and so they have to be seen as the lead people and the responsible people because this is in the interest of the longer term public health in the community. Regrettably, this is not adhered to the extent that it needs to be, even now, at CDC. But I think this was very important advice.

**So he was the one who started the methodology of how CDC worked with state and local health departments and countries, I assume, fairly early on; you make**

**yourself available but don't undermine them as leaders in their own health districts.**

An important component of the response was the preparation of an *Epidemic Aid Memo.* The National Institute of Health customarily received various requests to assist in outbreaks to which they might or might not respond. Actually, they responded to only a few but wanted to preserve the option of participating if they wished. The concept of being immediately responsive to a state for any request was Alex's idea of what should be done by his Epidemiology Branch. If the assistance provided data valuable for a paper, so much the better. But service to the states was really the key item. This concept immediately ran into difficulty with NIH leadership who believed NIH should have priority whenever it chose. This was the genesis of the Epidemic Aid memo which described the nature of the request for assistance and how CDC was responding. It welcomed appropriate participation by NIH or any other relevant agency and it was widely distributed. As it turned out there was never a conflict. However, copies of the memo were sent widely to the Surgeon General and others who welcomed this approach and found the information to be very informative. It generated a great deal of good publicity for CDC.

**I understand that initially NIH had the right of first refusal.**

Right, and I asked Alex at one time, "Has this ever happened?"

He said "I don't know of any instance". But that placated NIH at that point and nobody seemed particularly distressed.

For a long time there was never a paper written jointly by somebody at CDC and NIH, however, and I believe the first one was my paper on a disease called epidemic neuromyasthenia. The syndrome is actually called *Chronic Fatigue Syndrome* at this point. We had an outbreak in Punta Gorda, Florida of a strange disease. I went down with one of our EIS officers named David Poskanzer. There were many cases with both affective symptoms and profound fatigue. The cause was not apparent but many were really sick. We did neurological examinations which turned up quite bizarre findings. Eventually, we had the head of neurology from Duke come down and review a number of patients with us. He was equally baffled. Eventually we wrote up this as a paper. However, I came to discover that there was a scientist by the name of Alexis Shelekov who was in NIH at the time. He had become very interested in this disease and had done a lot of work reviewing other similar mysterious outbreaks going back many years and including a large outbreak in the 1930s of what was called poliomyelitis in Los Angeles.

Alexis and I then decided to write a medical progress review for the New England Journal. He would be the senior author but he came down with hepatitis and was really out of commission for a while. So he said, "Why don't you write it and you be senior author," which was very generous. Thus, I wrote the medical progress report and it was cleared through CDC and NIH. In1959, it was regarded as the first paper in which NIH and CDC actually collaborated. One item of possible interest; from what I understand from talking with Alex and Justin Andrews who had played an important role in launching CDC, the longer term survival of CDC was felt by them to be in doubt. Here was a federal establishment in a city, distant from Washington. It was in rented office space on Peachtree Street and there was a question of whether CDC would survive as an entity. It then consisted only of the remnants of the malaria control program and many of those activities were in Savannah. CDC had some virology labs in Montgomery, Alabama, and bacteriology labs in suburban Atlanta plus the office space in downtown Atlanta. There was fear the various components would be transferred to other activities and that CDC, as such, would be abolished. Thus, the idea that if there were a special purpose-built permanent building adjacent to Emory, CDC was far more likely to survive. A new building was finally completed in 1960. I'd just come back from residency, so I was one of the first residents in that building and now that building has just been demolished!

**Interesting. Another thing that I was thinking about as you were talking that relates to the work that you did later, there was a way of working with other entities that involved their methodology of offering help without taking over, letting the people who live there take ownership of it and I wondered if and how that prepared you for working with smallpox and later other diseases and if you adopted that philosophy as well and how you think that worked?**

Alex did assign EIS officers to several laboratories where work was going on with polio. It helped to cement relationships between the academic community and CDC. Others were assigned to State Health Departments and this served to build other bridges for the very young and as yet untested CDC, I think, as a matter of fact, based on discussions with Alex and others, the real turning point for CDC was the 1955 Salk polio vaccine incident [Cutter Lab] in which children were paralyzed by the new vaccine. I'd just come back to CDC and the cases had already begun to occur. The vaccine had been hailed as a great victory for medicine and public health, which it was, but, suddenly, there were cases caused by the vaccine. Alex assumed full responsibility for characterizing the problem, finding a solution and reassuring the country. Two new EIS officers, Neil Nathanson and Jack Hall, were assigned full time to this. They'd just come aboard and they were the whole statistical team. There was an effort made to run down each of the cases and to get full histories of the cases and so forth and to find out which

companies were involved and what the lot numbers were. All polio vaccinations stopped meanwhile.

And for a period of time, reports were made every day. They were mimeographed reports and widely distributed.

The **stencil duplicator** or **mimeograph machine** (often abbreviated to **mimeo**) is a low-cost printing press that works by forcing ink through a stencil onto paper. http://www.dinosaursandrobots.com/2010/03/mimeograph-machine.html

Alex took the view that there would be much less in the way of apprehension if people were confident that we are making available all that we knew. He had a number of visits to Washington on demand as high level officials argued that the information was alarming people. Alex insisted, “No, it’s clear that we are authoritative and giving everything that is possibly relevant,” and that this was the most reassuring approach.

Alex consulted with the Surgeon General on frequent occasions. Eventually, it proved possible to begin vaccinating again fairly quickly. They had discovered that the problem was one laboratory (Cutter) and had discovered the problem in manufacture. Confidence was restored and by that autumn vaccination was going ahead. The point that he was making was that getting the surveillance, the data, the cases currently and getting it distributed had a very positive value.

Alex meanwhile was involved in trying to get an epidemiologist named in every state, because in many states there were people who had different titles, but he wanted *the* epidemiologist designated by the state. So it might be a veterinarian, it might be a

physician. It might be professionals in a state who would have had very different titles. The idea was to have *a* designated person in every state that was responsible with whom he communicated. The health officers agreed and, of course, that began the Association [Council] of State and Territorial Epidemiologists [CSTE].

**Do you remember any of the earlier people who were in that organization, CSTE?**

Well I think one of the ones he thought a lot of was Bob Korns, and he was in Albany.

**I don't imagine there's any of the earliest members left around.**

No, in fact there has been a frequent turnover in the state epidemiologists. Ace Hollister from California was another prominent leader.

**I thought it would be interesting to interview them and see what their perspective was on working with CDC.**

Yeah, there are—I would be very doubtful any are around. The only person I can think of who has been around for longer than I was is Jim Steele.

**I've talked to him.**

Have you. I don't remember what year he came.

**He came in the late '40s. He did EIS later though, but he was the first veterinarian and introduced the idea of zoonotic diseases and the transfer between animals and people.**

That's right. He was looking at this one medicine concept long before anybody. He was outstanding. He was marvelous and did a great job. From that I had an impression of veterinarians which was very positive. In fact, as time went on it became apparent to me that we often did better with veterinarians than with physicians in training in epidemiology. Veterinarians think in terms of herds and numbers. We think of individual cases of illness. We've had some very good veterinarians. Jim Steele was every public health veterinarian's mentor.

I got to know a veterinarian friend of Jim Steele's by the name of K.F. Meyer. He was at the Hooper Foundation at University of California. His knowledge was encyclopedic. We had him for a dinner speaker at the EIS conference. He went on for three and a half hours but I must say at the end I was still fascinated. I don't think anybody was bored! I remember when he came I was going to introduce him and I said to Jim, "What do I say about K.F? He's quite a remarkable guy and I know he's done some work on brucellosis."

And I'll never forget Jim's comment; he said, "Who do you think named the disease?" Oh my god, it was K.F. Meyer!

**Now I understand there were some animated discussions between Alex and others. Do you remember issues, for instance, with lab people?**

Yeah, yeah. He and Ralph Hogan the head of the laboratory didn't get along very well. Likewise he and Sib Simmons who was the head of the program on vector-borne diseases, such as malaria, were often at odds with the laboratory group, there was continuing conflict about what specimens the lab would and would not run in support of epidemiological studies and the fact that the laboratory received specimens of interest which were handled and sometimes written up without reference to epidemiology.

**Was it a territorial issue?**

No, I don't think it was. I think it was just that the whole virology unit was down in Montgomery. There were two different functions involved. When we needed work done on specimens, Hogan could say, "Well, we'll do them or not. We'll do them in a hurry or not." On occasion, he regarded the specimens that we wanted to have run as not being very important to his mission. And that I think happened not infrequently. They had other things to do. I can see their vantage point better from a distance than at the time. But it was not a happy marriage, that's for sure.

**In your position as the head EISO….**

When I came back [to CDC], I assumed a role at Alex's request as his alternate and deputy.

It was a busy time. Responsibility for publishing the MMWR [Morbidity and Mortality Weekly Report] was taken up in 1960. Russ Alexander served as editor for a very short period of time before left the Service. Then I took it on for the first five years. It was all but impossible to get people to write articles for it or to summarize studies. Gradually we began to get more material but not for a while. It took time for it to acquire stature. Originally the idea was that reports of outbreaks or summaries of data would not be attributed. Alex decided that we should break from MMWR tradition and to attribute authorship. Within a remarkably short period of time, it became recognized that there was no faster route to publication than the MMWR.

**I see—that changed things.**

The concept of surveillance and the regular reporting of material in surveillance reports proved to be invaluable in communication with the public health community and with scientists working in the field. Alex began the practice in conjunction with the Salk

vaccine crisis. Subsequently, in addition to the polio reports, there were regular reports being issued for diphtheria and hepatitis and eventually measles and malaria.

The utility of surveillance reports was clear and so I began the practice for smallpox when I went to WHO. We had 50 countries where programs would be required and with whom we needed to keep in contact. I wanted to have one individual in each country that we would have communication with and try to establish that so that you then had a point of contact for query and discussion of strategy and what have you. Dealing with a Ministry of Health in the abstract was not helpful. It was important to have one designated person. Gradually that was achieved.

*Dr. D.A. Henderson administering smallpox vaccine 1972*
*http://apps.nlm.nih.gov/againsttheodds/exhibit/preventing_disease/making_history.cfm*

I finished the first international surveillance report about 6, 7, 8 months after I got there. I did my first surveillance report which went out to some 500 people. Some 2 to 3 months later, I finished the next one. It was rejected. I was informed that the director generals had decided there's too many publications being sent out from the headquarters of all types, so there was going to be a committee named to review all publications and decide which ones they would continue and which ones would not. I went to the assistant director general, Karefa-Smart, explained what we were doing. He said, “Oh, I think that's a good idea what you're doing. Tell you what, why don't you take that report that we turned back, do it differently.”

He wouldn't offer advice as to what had to be changed, only that the report had to be different. And he said, "It will be all right. I think it's okay."

So I went back and tried to figure out how to do the report I had just completed but done differently. It was rejected again. I decided that I couldn't run the program with so many different countries involved and with no contact to permit commonality in strategies and direction. So I went to the director general and said, "I've had trouble with the surveillance reports," and he said he knew. I then informed him that I couldn't run the program without the surveillance reports and told him that I was sure that there are people who could run such a program but I could not."

So he said, "Don't do anything rash. Let me work on this." Several weeks later the proposal was made that instead of a surveillance report I use WHO's Weekly Epidemiological Record (like the CDC's MMWR). It was distributed to all countries – some 5000 copies but up to that time it was primarily a line-listing, of all counties that had that week reported cases of cholera, yellow fever, or smallpox. We called it "the laundry list of local infected areas". Few paid much attention to it. I knew well the Australian editor who began putting in items on smallpox including maps, graphs, discussions of policy, etc. which would extend for a page, maybe two pages, but gradually the reports grew longer and more frequent.

**So you had the experience and the intuition to include that in your job when you transferred to World Health Organization.**

Well, I just took the idea and the weekly epidemiological record existed, had been going on for some time, and we simply amplified it a little bit in various ways.

**Base population numbers must have been difficult to ascertain.**

WHO has a document list. Let's say there's a long list of addressees that receive all documents of the organization. We could add that to that, the program people when I was in WHO, it seemed like I was writing all the time. It was necessary considering that we had an international field staff of 150 or more plus national program staff. It was necessary if we were to have a coherent program. Our headquarters staff was ten in number. This included three secretaries and two administrative officers. It was a challenge and the challenge was quite simply we didn't have e-mail and we had nothing resembling a computer.

We could use Telex but not very often because it was very expensive and telephone was out of the question. The question was, "What do you do to keep in touch?" That meant travel or the post —mainly the special diplomatic pouch that would go direct to the country at least. That didn't work all that well. For example, any communication

that I sent from Geneva, let's say to Uganda; it had to be addressed through the regional director who was located in Brazzaville. He, in turn, would look at it and have one of his people then draft something that would incorporate this with his comments and send it to the WHO representative in Kampala, who then would eventually get around to giving it to whoever the WHO staff member was responsible for smallpox. It usually took maybe five or six months before I could get a reply to anything.

**How frustrating.**

It was. And if the regional director decided he didn't want to send on what you had written, that's it.

**And did you know if it wasn't sent on?**

No. So there was another solution to it and the solution was to send the original through its problem route, and to copy it by mail to where it was going to go. It was not be the fastest route but it usually got there. I couldn't spend WHO money to send it by mail so I paid for that myself. It was Uganda that almost got us into trouble at one point because the message came in from the regional office; "Could we send 2 million doses of smallpox vaccine urgently?" They were running out.

I thought we might have been discovered on this one. I had already received the same message from Uganda about three or four months before and we'd already dispatched the vaccine However, I couldn't be sure whether this was another request or whether it was just the original request which was just making it through the tangled WHO system. We sent another 2 million doses just to be sure. Somehow or other I never got caught on this.

**It goes along with talking to Joel Breman. He was talking about how flexibility came into play many times. That was the term used.**

That's right; flexibility was clearly what it was. Alex was this way with the epidemiology branch getting things done. He would bypass a number of people and a certain amount of the formalities in international communication. Every so often there would be a bit of a to-do because this really should go through channels, etc., etc. We would offer the contrite reply, "Oh my goodness, yes, we certainly wouldn't do that again."

**I was going to ask you if you knew anything about the emphasis on bioterrorism in the early days of CDC, and if you could talk about that for a bit.**

I'm not sure there's an awful lot to say. Alex Langmuir was an advisor to the armed forces epidemiological board which is a military group. And during the war he had been part of the respiratory disease commission. They were looking at the problems of

respiratory infections in troops, particularly in the training camps. There was a lot of absenteeism because of it and they were trying to deal with that. He did have secret clearance. I did not. He was the only one that did. So a number of things went on that I would not know about. And he did consult on potential biological weapons.

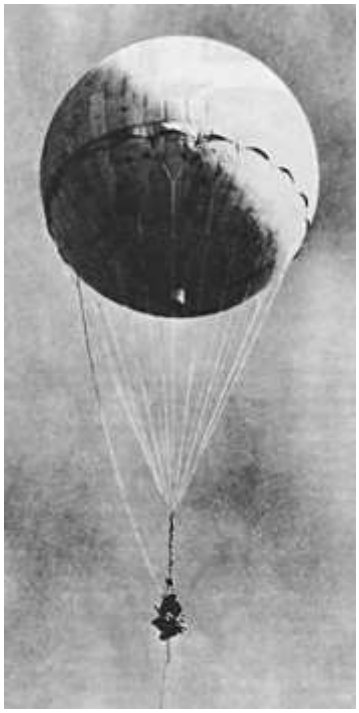
The genesis of this relates to the Japanese who, in World War II, had a laboratory. They in fact produced a number of organisms and waged war on China in a number of ways. They released cholera plague, and several other organisms. Then at the end of the war that laboratory became part of China.

When we were in the Korean War, there was concern that biological weapons might be used by the Koreans. One of the things that came up was the possibility they might float organisms across in a balloon. Preposterous as it may seem, they actually did float over a number of balloons with incendiary devices and they did start some fires. Alex thus proposed the idea of having a group of epidemiologists who would be on 24-hour call to investigate an epidemic wherever it might be; in fact, to be quickly responsive. This would be the best defense we could have against some unusual outbreaks occurring as a result of use of biological weapons. Looking back on it, it probably was not a bad idea because NIH's investigation of outbreaks, as I told you, was a voluntary action. Let's say we had something in Idaho or in Minnesota or wherever they don't have the capability or laboratory backup or whatever to do what was needed to identify and control it. The idea of having some flexible group of epidemiologists on 24-hour call was what he sold the idea on. That's my understanding.

*Fire balloons or balloon bombs were hydrogen balloons with one 15 kg antipersonnel bomb and two incendiary devices attached. They were launched by Japan during World War II, designed to wreak havoc on American cities, forests and farmlands.*

*Japanese bomb-carrying balloons were 10 m in diameter and when fully inflated, held about 540 m³ (19,000 cu. ft) of hydrogen. Launch sites were located on the east coast of the main Japanese island of Honshu.*

*Similar, but cruder, balloons were also used by the British to attack Germany between 1942 and 1944.*
*http://www.martinfrost.ws/htmlfiles/july2006/fire_baloons.html*



This in a way set a precedent that sort for responsiveness. It was an opportunity then for Alex to talk to state epidemiologists and

say, “Here's help, and I'm happy to send people immediately.” Usually the calls came about 5:30 PM Friday afternoon just as everybody left. Some complicated damn thing, you know. So at that point one had to run down people and get them on the plane and get them off. At any rate, this did build some bridges for responsiveness and it was unique; there was nothing like that.

In the smallpox program what we set up was to have every health unit report every week on cases of smallpox and to begin from the very beginning having a team, a couple of people, go out to that place, see if they can find other cases and vaccinate. The effect of this was to build a rapport in the sense they knew that if they reported something, they would get help and it was worthwhile. It wasn't a report just going into the archives somewhere. And this had a huge effect in building the rapidity and the regularity of reports in the various countries. But in a way it was a takeoff on the epidemic intelligence concept, Alex using this as an opportunity for people to go out. It gave them experience, it built a link with the epidemiologists, and it certainly gave us a better idea of what was going on in the country.

**I have one final question, and it is to ask you the question about a picture of three men, and the caption under the picture is something like, “three sticks are not enough.” Do you know what I’m talking about?**

Yes.

**Can you tell me about that picture?**

This happened along about 2003, 2004. We had made a tremendous effort to get an adequate supply of smallpox vaccine. When 9/11 hit, we called CDC to ask how much vaccine they could send immediately should we learn that we had experienced an attack. They reported 90,000 doses. Most of the rest of the 15 million doses in our reserve supply was not availabe—the diluent had gone bad and they hadn't re-titered the vaccine regularly. We would need tens of millions of doses, and at that time, there was no production facility. So we went all out with a special effort to get what we thought was going to be 40 million doses. But the secretary at a press conference was pressed as to what the government was going to do. He guaranteed there would be a dose for every person in the United States. Instead of getting 40 million which we thought we would need, we got 300 million. A new method for vaccine production was needed. We called in a former Major General from the Army, Phillip Russell, himself a virologist and knowledgeable vaccine research scientist We had been assured that 5 years would be needed to produce the vaccine but within 24 months, tens of millions of doses of vaccine were being produced.

A number of studies in human subjects were necessary to be certain that the vaccine would meet standards. For this, we used a new vaccination device – a needle with two points with which one did 15 rapid punctures. CDC was doing studies, the military was doing some, and we were working with FDA and, in all of these, the new, so-called bifurcated needle was used.

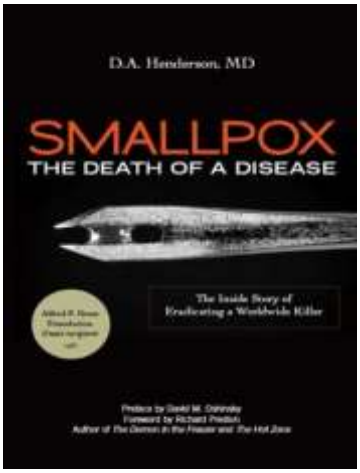
**That's in your book.**

Yeah.

So we soon found when we tried to use the needle, 15 rapid punctures with the needle worked best. Earlier studies with another type of needle had advised 3 gentle pressures of the needle through a drop of vaccine. The same happened with just doing 3 punctures—enough vaccine was not implanted in the skin and vaccination failed. Thus, all our research studies studies used the technique of 15 punctures, not 3, so with the vaccine produced and the studies done, we were printing up the instruction sheets when we received a call from FDA. They informed us that when the original studies were done (probably 30 years before), the manufacturer proposed that just 3 gentle pressures be used. No one could find any record of the studies either at the vaccine producer or in FDA files. They demanded that the instruction sheet be changed. You can imagine what a battle royal we had with FDA and there were words exchanged which I would not wish to repeat. But FDA stuck by its guns against all entreaties based on science and logic. They wouldn't change. So a poster was prepared with a picture of myself, Phil Russell, and Stuart Simonson, the three of us, and it said “the three pricks”.

In the 1960s and '70s, American physician and epidemiologist D.A. Henderson led the global campaign to eradicate smallpox. As VOA's Rosanne Skirble reports, the strategy he deployed changed the way health officials wage war against infectious diseases and biological threats.

http://www.youtube.com/watch?v=LtQ5JSW2eNk




The Global Health CHRONICLES

MALARIA CONTROL: CDC BEGINNINGS

*Standing left to right, this 1966 image showed Dr. Donald A. Henderson, Dr. J. Donald Millar, Dr. John J. Witte, and, Dr. Leo Morris, standing in one of the Centers for Disease Control and Prevention's (CDC) former offices discussing what may have been epidemiologic findings related to the eradication of smallpox, an effort in which the CDC was integrally involved at the time. Dr. Donald A. Henderson, headed the international effort during the 1960s to eradicate smallpox. Dr. J. Donald Millar, was the former Director of the National Institute for Occupational Safety and Health (NIOSH) from 1981 through 1993 From 1963 until 1970, he directed CDC's Smallpox Eradication Program. Dr. John J. Witte, was the former Chief of the organization's Immunization Branch, and Dr. Leo Morris who specialized in statistical analysis, and implementation of the newly-introduced jet injector vaccine-delivery system in the battle against smallpox.* *http://en.wikipedia.org/wiki/File:Smallpox_eradication_team.jpg*

**So you got the whole picture from Dr. Langmuir.**

Well, he had a huge impact on me, there's no doubt about it. Everything from surveillance to fieldwork to portraying things as they may be, of finding ways to get things done that do not seem to be so obvious or maybe even quite so—say kosher.

**Well, thank you for your time and the information you provided on the early history of CDC, Dr. Henderson.**

**END.**